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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/776,438

02/10/2004

Lawrence C. Gunn III

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07/25/2006

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EXAMINER

BLEVINS, JERRY M

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/776,438

Applicant(s)

GUNN ET AL.

Examiner

Jerry Martin Blevins

Art Unit

2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-99 is/are pending in the application.
- 4a) Of the above claim(s) 1-17,26,27 and 51-99 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18-25 and 37-50 is/are allowed.
- 6) ☒ Claim(s) 28-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Claim 37 is generic and allowable. Accordingly, the restriction requirement as to the encompassed species is hereby withdrawn and claims 38-40 are no longer withdrawn from consideration since all of the claims to this species depend from or otherwise include each of the limitations of an allowed generic claim. However, claims 1-17, 26, 27, and 51-99 remain withdrawn from consideration since they do not depend upon or otherwise include all the limitations of an allowed generic claim as required by 37 CFR 1.141.

In view of the above noted withdrawal of the restriction requirement as to the linked species, applicant(s) are advised that if any claim(s) depending from or including all the limitations of the allowable generic linking claim(s) be presented in a continuation or divisional application, such claims may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Response to Arguments

Applicant's arguments filed May 2, 2006, with respect to claims 28-36 have been fully considered but they are not persuasive.

Applicant's argument that applied prior art reference to Friesem et al., US 6,215,928, fails to teach an elongate guiding portion of a planar waveguide is not persuasive. Although Friesem only shows a two-dimensional rendering of a planar waveguide (Figure 2, element 22), Examiner holds that any rectangular waveguide would necessarily contain an elongated guiding portion, and one can easily deduce that the waveguide of Friesem, when viewed three-dimensionally, contains an elongated guiding portion.

Applicant's arguments, see pages 16-21 and 23-25, filed May 2, 2006, with respect to claims 18-25, 37, and 41-50 have been fully considered and are persuasive. The rejection of claims 18-25, 37, and 41-50 has been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 28 is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent to Friesem et al., number 6,215,928.

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Regarding claim 28, Friesem teaches an integrated optical apparatus (Figure 2) comprising: a planar waveguide (22) having an elongated guiding portion and a grating coupler (24); the grating coupler comprising: (a) a plurality of gratings having a respective scatter-cross-sections adapted to scatter light along at least a portion of a predetermined optical path (Figure 2 and column 4, lines 24-34), (b) a cladding (26) on the plurality of gratings; and (c) an anti-reflection coating (28) on the cladding for reducing reflections.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Friesem in view of US Patent to Snively et al., number 4,173,778.

Regarding claims 29-31, Friesem teaches the limitations of the base claim 28. Friesem does not teach that the coating comprises a multilayer, quarter-wave stack, wherein the stack comprises multiple layers of relatively high and low index material having thicknesses selected to provide reduced reflection for light of a predetermined wavelength incident on the coating at a predetermined angle. Snively teaches an anti-reflection coating comprises a multilayer, quarter-wave stack, wherein the stack

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comprises multiple layers of relatively high and low index material having thicknesses selected to provide reduced reflection for light of a predetermined wavelength incident on the coating at a predetermined angle (column 10, line 26 – column 14, line 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the coating of Friesem with the coating of Snavelly. The motivation would have been to improve the reduction of reflection at desired wavelengths.

Regarding claim 32, Friesem in view of Snavelly teaches the limitations of the base claim 31. Friesem also teaches an optical element (Figure 1, laser 10) oriented with respect to the grating coupler (12, seen in greater detail in Figure 2) so as to provide an optical path directed at the predetermined angle with respect to the grating coupler, the grating coupler coupling light between the planar waveguide and the optical element (column 3, line 26 – column 4, line 34).

Regarding claims 33-36, Friesem teaches the limitations of the base claim 28. Friesem does not teach that the coating comprises alternating layers of semiconductor (silicon) and dielectric material selected from the group consisting of oxide and nitride (which would necessitate multiple layers of dielectric material). Snavelly teaches an anti-reflection coating comprising alternating layers of semiconductor (silicon) and dielectric material selected from the group consisting of oxide and nitride (column 6, lines 21-45). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the coating of Friesem with the coating of Snavelly. The motivation would have been to improve the reduction of reflection at desired wavelengths.

Allowable Subject Matter

Claims 18-25 and 37-50 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 18, the prior art, as best exemplified by US Patent to Myers et al., number 5,473,721, teaches an integrated optical apparatus (Figure 6) comprising: a planar waveguide on a substrate (column 5, lines 40-52); the waveguide having an elongate guiding portion (Figure 6) and a grating coupler (110); the grating coupler comprising a plurality of gratings having respective scatter-cross-sections adapted to scatter light along a portion of a predetermined optical path (Figure 6 and column 5, lines 40-52) and a gas-filled cavity (column 5, lines 40-52), at least a portion of which is in the substrate. However, Myers, either alone or in combination with the prior art, fails to disclose or render obvious that the cavity is positioned with respect to the gratings such that light scattered outside the portion of the optical path is reflected by the cavity towards the gratings. Rather, the gas-filled cavity of Meyers bends light along the path of the waveguide.

Claims 19-25 are allowed due to their dependence from allowed base claim 18.

Regarding claim 37, the prior art, as best exemplified by US Patent to Welch et al., number RE37,354, teaches an integrated optical apparatus (Figure 9), comprising: a planar waveguide (112) having an elongate guiding portion and a grating coupler (119), the coupler having a flared waveguide portion (114) comprising a relatively narrow end portion and a relatively wide end portion (Figure 9), the flared portion having a grating

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(119) positioned to couple light between the coupler and an optical element (column 10, lines 7-26 teach that the apparatus couples light without specifying an optical element, but an optical element would necessarily exist in order for the apparatus to couple light), wherein the grating comprises curved elongate scattering elements having curvatures defined by substantially elliptical paths (Figure 9) so as to couple plane waves between the waveguide grating coupler and the optical element. However, Welch, either alone or in combination with the prior art, neither discloses nor renders obvious that the scattering elements have respective scatter cross-sections which scatter light along at least a portion of a predetermined optical path for matching optical modes of plane waves in the guiding portion and in the optical element.

Claims 38-50 are allowed due to their dependence from allowed base claim 37.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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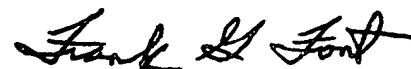
the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMB



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